

89224
S/056/61/040/001/030/037
B102/B212

24.6901

AUTHORS: Berestetskiy, V. B., Terent'yev, M. V.

TITLE: Higher nucleon charge and magnetic-moment distribution moments

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40,
no. 1, 1961, 324-327

TEXT: The problem of spectral densities g_1^V and g_2^V of isovectorial electromagnetic form factors of the nucleon (G_1^V and G_2^V) due to two-pion states has been investigated in Refs. 1 and 2. To calculate them, it is necessary to know the scattering amplitudes of pions by nucleons in the nonphysical region of transferred momenta and energies. From the pole part of the amplitudes and (π, N) scattering data, only expressions for amplitudes at a transferred momentum t near $t = 4\mu^2$ can be determined; the anomalous magnetic moment and mean square nucleon radius r^2 can not, however, be calculated without additional hypotheses about the (π, N)

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scattering and the part of the multi-meson and nucleon states. To compute these quantities was the aim of the present work; they are the higher charge and magnetic-moment distribution moments:

$$(r^{2n})_1^V = \frac{(-1)^n (2n+1)!}{n!} G_{1,2}^V(0) = \frac{(2n+1)!}{\pi} \int_0^\infty g_{1,2}^V(t) dt$$

or higher multipole potentials of the nucleon transition a_1 . Using

$$g_{1,p}^V = \frac{8}{3} f^2 \xi^3 / \varepsilon^2, \quad g_{2,p}^V = 4f^2 \xi^5 / \varepsilon^4, \quad \xi \ll \varepsilon/2 \quad (4),$$

$$g_{1,p}^V = f^2 [2\xi - \pi\varepsilon/2 + \varepsilon^2/2\xi], \quad g_{2,p}^V = -2f^2 [2\xi - \pi\xi^2/2\varepsilon], \quad \varepsilon/2 < \xi \ll 1 \quad (5),$$

with $\xi = \sqrt{t}/4\mu^2 - 1$ and $\varepsilon = \mu/M$, μ - meson mass, M - nucleon mass, and

$$q^V(r) = \frac{1}{(2\pi)^2} \int_0^\infty g^V(t) \frac{1}{r} \exp(-\sqrt{t}r) dr \text{ the relations are obtained:}$$

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$$\left(\frac{r_1^{2n}}{r_1}\right)^V = \frac{4f^2(2n+1)!}{(4\mu^2)^n n!} \left[-\frac{(n-1)!!}{8} + \frac{(2n-3)!!}{2^{n+1}} + \frac{f^2}{4} \frac{(2n-1)!!}{2^{n+1}} \right], \quad (9)$$

$$\left(\frac{r_2^{2n}}{r_2}\right)^V = \frac{f^2(2n+1)!}{\epsilon(4\mu^2)^n n!} \left[\frac{(n-2)!!}{4} - 2\epsilon \frac{(2n-3)!!}{2^{n+1}} \right],$$

$$\rho^V(r) = \frac{l!}{(2\pi)^l} e^{-2\mu r} \left[-\frac{\pi\epsilon}{r^3} + 3\sqrt{\frac{\pi}{\mu}} \frac{1}{r^{7/2}} \right], \quad (10)$$

$$\rho_3^V(r) = \frac{l!}{(2\pi)^l} e^{-2\mu r} \left[-6\sqrt{\frac{\pi}{\mu}} \frac{1}{r^{7/2}} + \frac{4\pi}{\mu} \frac{1}{r^4} \right].$$

Finally the deviation from its value of the scattering phase at an electron-nucleon scattering for a point nucleon is studied and expression

$$\begin{aligned} [\sqrt{l(l-1)/(2l-1)}] (a_l^{l-1} - b_l^{l-1}) &= 2i\gamma^{l-1}, \\ [\sqrt{(l+1)(l+2)/(2l+3)}] (a_l^{l+1} - b_l^{l+1}) &= 2i\gamma^{l+1}, \\ [(l+2)/(2l+3)] a_l^{l+1} + [(l+1)/(2l+3)] b_l^{l+1} &= -2i^3 \delta_l^{l+1}, \\ [(l-1)/(2l-1)] a_l^{l-1} + [l/(2l-1)] b_l^{l-1} &= -2i^3 \delta_l^{l-1}, \\ a_l^l &= -2i^3 \delta_l^l, \quad a_{0,l}^l = -2i^4 \delta_l^l, \quad b_{0,l}^l = 2i\gamma_{0,l}^l. \end{aligned} \quad (11)$$

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is obtained; δ_1^J and δ_0^J are the triplet and singlet scattering phases with a total momentum J , $\gamma_{0,1}^J$ and γ^J denote the state shift parameters for total spin 0 and 1 and the states with orbital momenta $J-1$ and $J+1$. If the spectral densities are determined by (5) the quantities a_1^k and b_1^k can be expressed by

$$a_l^l = NQ_l(1+2\eta^2) \left\{ -\left[\frac{A}{\rho} + \frac{\omega B}{IM}\right] J_1 + \left[\frac{\omega(1+2\eta^2)}{IM} - 4\frac{l+1}{l} \eta^4 (1-\eta^4) \right] J_2 \right\},$$

$$a_{l-1}^{l-1} = NQ_l(1+2\eta^2) \left\{ -\left[\frac{A}{\rho} + \frac{l+1}{l} \frac{\omega B}{M}\right] J_1 + \left[\frac{l+1}{l} \frac{\omega(1+2\eta^2)}{M} + \frac{4(l+1)^2 \eta^4 (1-\eta^4)}{l(l-1)M} \right] J_2 \right\},$$

$$a_{l+1}^{l+1} = NQ_l(1+2\eta^2) \left\{ -\left[\frac{A}{\rho} - \frac{\omega B}{M}\right] J_1 + \left[-\frac{\omega(1+2\eta^2)}{M} + \frac{4(l+1)\eta^4 (1-\eta^4)}{(l+2)M} \right] J_2 \right\},$$

$$b_{l-1}^{l-1} = NQ_l(1+2\eta^2) \left\{ -\left[\frac{A}{2\rho} + \frac{l+1}{l} \frac{\omega B}{M}\right] J_1 + \left[\frac{l+1}{l} \frac{\omega(1-2\eta^2)}{M} - \frac{2\eta^2}{M} \right] J_2 \right\},$$

$$b_l^{l+1} = NQ_l(1+2\eta^2) \left\{ -\left[\frac{A}{2\rho} - \frac{\omega B}{M}\right] J_1 + \left[-\frac{\omega}{M}(1-2\eta^2) - \frac{2\eta^2}{M} \right] J_2 \right\},$$

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$$\begin{aligned}
 a_{0,l}^l &= NQ_l(1+2\eta^2) \left\{ -\frac{A}{2p} J_1 - \frac{2\eta^3}{M} J_2 \right\}, \\
 b_{0,l}^l &= NQ_l(1+2\eta^2) \sqrt{\frac{l+1}{l}} \frac{\eta^2}{\omega} \left[-\frac{\omega^2 B}{\eta M} J_1 - \frac{\omega^3 J_2}{\eta M} \right]; \\
 A &= \frac{Mm_s + Mp + p^3}{Mp} + (1+2\eta^2) \frac{p(M+p)}{M(m_s+p)}, \quad B = 1 + \frac{M}{m_s+p}; \\
 J_1 &= \frac{l^2 V \pi}{2} \frac{1}{L^{\eta l}} \left[1 - \frac{V \pi}{8\zeta} \left(1 - \frac{1}{L} \right) \right], \quad J_2 = -2l^2 V \pi \frac{1}{L^{\eta l}} \left[1 - \frac{V \pi}{8\zeta} \left(1 - \frac{1}{L} \right) \right];
 \end{aligned}$$

$\zeta = eV L / 2, \quad \eta = \mu/p, \quad \omega = \eta V \sqrt{1+\eta^2}, \quad N = ie^2 p / 2\pi,$
 $L = \eta(l+1)/\sqrt{1+\eta^2}.$
X

p_1, k_1 are nucleon and meson momentum, respectively. Finally the authors thank I. Ya. Pomeranchuk for discussions. A. D. Galanin, A. F. Grashin, and B. L. Ioffe are mentioned. There are 6 references: 1 Soviet-bloc and
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Higher nucleon charge and...

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5 non-Soviet-bloc.

SUBMITTED: August 3, 1960

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39-26

S/056/61/040/001/032/037
B102/B212

24.6900

AUTHORS: Gribov, V. N., Terent'yev, M. V., Ter-Martirosyan, K. A.

TITLE: Mandelstam representation in the perturbation theory with anomalous mass ratio

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40, no. 1, 1961, 337-340

TEXT: The integral Mandelstam representation for the scattering amplitude is valid only if the process is without any "anomalous" graphs. The authors investigated, how the Mandelstam representation changes in an "anomalous" case; the example of the simplest quadratic diagram is used (Fig.1); p_1 and p_k denote the four-momentum of the particles, m and μ denote the masses of virtual particles, $p_1+p_2+p_3+p_4=0$. The case is considered where $p_1^2=p_2^2=p_3^2=p_4^2=M^2$, the diagram is a function of the invariant variables: $s=(p_1+p_2)^2$ and $t=(p_2+p_3)^2$; for the "normal" case, if $M^2 < m^2 + \mu^2$, $\lambda(s,t)$ is given by

Fig. 1

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Mandelstam representation in...

$$A(s, t) = \frac{1}{\pi^2} \int_{\Omega_H} \frac{\rho(s', t') ds' dt'}{(s' - s - i0)(t' - t - i0)} \quad (1)$$

$$\rho(s, t) = \pi / \sqrt{-s f(s, t)},$$

$$f(s, t) = 4(M^2 - m^2 - \mu^2)^2 + (t - 4\mu^2)(4m^2 - s),$$

$$A(s, t) = \frac{1}{\pi} \int_{4m^2}^{\infty} \frac{A_1(s', t)}{s' - s - i0} ds', \quad (2)$$

$$A_1(s, t) = \frac{i}{\sqrt{-s f(s, t)}} \ln \frac{\sqrt{f(s, t)} + \sqrt{t(4m^2 - s)}}{\sqrt{f(s, t)} - \sqrt{t(4m^2 - s)}},$$

or

$$t < 0,$$

the ranges and paths of integration are shown in Figs. 2, 3. For an anomalous case ($M^2 > m^2 + \mu^2$)

$$A(s, t) = a(s, t) + \frac{1}{\pi} \int_{4m^2}^{\infty} \frac{A_1(s', t)}{s' - s - i0} ds', \quad (3)$$

$$a(s, t) = \frac{1}{\pi} \int_{4m^2}^{s_k} \frac{a_1(s', t)}{s' - s - i0} ds', \quad a_1(s, t) = \frac{2\pi}{\sqrt{s f(s, t)}}. \quad (4)$$

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Mandelstam representation in...

hold and one obtains $A(s, t) = a(s, t) + \frac{1}{\pi i} \int_{H'} \frac{p(s', t') ds' dt'}{(s' - s - i0)(t' - t - i0)} = a(s, t) + A_0(s, t)$. (7).

The function $a(s, t)$, which is defined by (6) for various t regions, has for $t \rightarrow 0$, at $s \rightarrow s_k \rightarrow s_\Delta$ the following pole-type singularity $a(s, 0) \underset{s \rightarrow s_\Delta}{\sim} \zeta/(s - s_\Delta)$.

$\zeta = (1/\mu^2) \sqrt{(4m^2 - s_\Delta^2)/s_\Delta}$. The anomalous range (referred to by L.D.Landau) is hatched in Fig.2. Curve L_H (Fig.2) is not singular for the function $A(s, t)$ for an anomalous case, since the singularities of the functions a and A_0 compensate on this curve. In the region $t > 4\mu^2$ the representation

$$A_0(s, t) = \frac{1}{\pi} \int_{4m^2}^{\infty} \frac{1}{i \sqrt{s' t f(s', t)}} \ln \left(\frac{\sqrt{f(s', t)} + i \sqrt{f(s' - 4m^2)}}{\sqrt{f(s', t)} - i \sqrt{f(s' - 4m^2)}} \right) \frac{ds'}{s' - s - i0}.$$

holds. If the part is separated from A_0 that has a singularity in $s = s_k$ then $A(s, t) = A'_0 + a'$, with

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Mandelstam representation in...

$$A'_0 = \frac{1}{\pi} \int_{4m^2}^{\infty} \frac{1}{i\sqrt{s't}}} \ln \left(\frac{i\sqrt{i(s' - 4m^2) + V}}{i\sqrt{i(s' - 4m^2) - V}} \right) \frac{ds'}{s' - s - i0},$$

$$a'(s, t) = \int_{s_k}^{s_\Delta} \frac{2 ds'}{\sqrt{i's't}(s' - s - i0)} + \int_{s_\Delta}^{\infty} \frac{ds'}{\sqrt{i's't}(s' - s - i0)}.$$

The function A'_0 has no branching point in $s=s_k$. After integration one obtains ($0 < s < s_\Delta$):

$$a'(s, t) = \frac{1}{\sqrt{s't}} \left\{ 2 \ln \frac{\sqrt{s_\Delta(s_k - s)} - \sqrt{s(s_k - s_\Delta)}}{\sqrt{s(s_k - s_\Delta)} + \sqrt{s_\Delta(s_k - s)}} + \right. \\ \left. + \ln \frac{\sqrt{4m^2(s_k - s)} + \sqrt{s(s_k - 4m^2)}}{\sqrt{4m^2(s_k - s)} - \sqrt{s(s_k - 4m^2)}} + \ln \frac{i\sqrt{s_k - s} - \sqrt{s}}{i\sqrt{s_k - s} + \sqrt{s}} \right\}.$$

After continuing analytically into the region $s \sim s_k$, the function a' is found to have no singularities on the line $s=s_k$. If an anomaly appears only in the simplest diagrams, as in Figs. 1, 4, and 5 (e.g., in real Σ and Λ hyperon scattering processes) then the exact scattering amplitude can be described by $F(s, t) = a(s, t) + a(s_c, t) + a(s, s_c) + F_o(s, t)$.

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Mandelstam representation in...

$s_0 = 4M^2 - s - t$, $F_0(s, t)$ has a usual Mandelstam representation. There are 5 figures and 3 references: 1 Soviet-bloc and 2 non-Soviet-bloc.

SUBMITTED: August 8, 1960

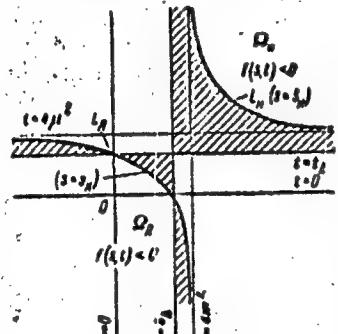


Fig. 2

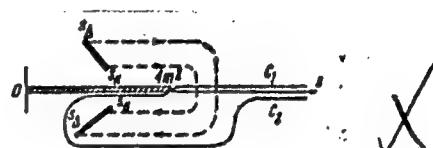


Fig. 3

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Mandelstam representation in...

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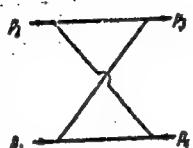


FIG. 4 (Fig. 4)



FIG. 5 (Fig. 5)

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TERENTYEV, M. V.

"Application of Dispersion Techniques for the Electron Magnetic
Momenta Calculation"

report presented at the ¹⁹⁶² Int'l. Conference on High Energy Physics, Geneva,
4-11 July 1962

Institute of Theoretical and Experimental Physics, Moscow, USSR

24.610

39494
S/056/62/043/002/037/053
B125/B102

AUTHOR: Terent'yev, M. V.

TITLE: Use of the dispersion technique for calculating the electron magnetic moment

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43,
no. 2(8), 1962, 619 - 636

TEXT: Corrections of the order of α^2 to the abnormal electron magnetic moment $\mu = \sum_{k=1}^6 \mu_k^{(2)} + 2 \sum_{k=1}^4 \mu_k^{(3)}$ (fourth order with respect to α) are computed by using the unitary relation for the scattering matrix and the dispersion relations for the magnetic form factor. The amount of calculations is smaller than with the use of the usual Feynman technique. The $\mu_k^{(2)}$ terms, which are calculated step by step, refer to two-particle states (one electron with momentum k and one positron with momentum k'), and the

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Use of the dispersion technique ...

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$\mu_k^{(3)}$ terms refer to three-particle states (one electron with k , one positron with k' , and one photon with momentum q and polarization σ). The final result

$\mu = (\alpha^2/\pi^2)((197/144) + (\pi^2/12) + (3/4)f(3) - (1/2)\pi^2 \ln 2) = -0.328 \alpha^2/\pi^2$
agrees with those obtained by C. Sommerfield (Anr. of Physics, 5, 26, 1958) and A. Peterman (Helv. Phys. Acta, 30, 409, 1957). Using this dispersion technique one can easily reduce the integrations to one double integral of rational functions and logarithms. There are 6 figures.

SUBMITTED: March 8, 1962

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YEVCHENKO, G.I.; TERENT'YEV, M.V.

Increasing the output of open-hearth furnaces. Metallurg 8 no.4:16-17
(MIRA 16:3)
Ap '63.
(Open-hearth furnaces—Maintenance and repair)

S/056/63/044/004/029/044
B102/B106

AUTHOR: Terent'yev, M. V.

TITLE: Vector current conservation in weak interactions and the mass difference in isotopic multiplets. The $\pi^+ \rightarrow e^+ + \nu + \pi^0$ decay

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 44, no. 4, 1963, 1320 - 1328

TEXT: It is investigated to what extent an interrelation exists between the hypothesis of vector current conservation (cf. Phys. Rev. 109, 193, 1958) and renormalization of the vector coupling constant. Since the accuracy of the hypothesis of vector current conservation in weak interactions is the same as that for isotopic invariance, one would except that in decays of strongly interacting particles the vector coupling constant which is linear in Δm in isotopic multiplets should be renormalized. The theorem is stated that isotopic invariance is violated at least in the β -decay of the neutron and the Σ -hyperon and in the decays $\pi^+ \rightarrow \pi^0 + e^+ + \nu$, and this renormalization is not valid. This theorem is proved to hold in all orders in strong interactions. The decay $\pi^+ \rightarrow \pi^0 + e^+ + \nu$ is analyzed

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Vector current conservation...

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from the standpoint of the hypothesis of vector current conservation; radiative corrections are taken into account. This theorem restricts the degree of indeterminacy of the theoretical value of the probability. For the π^+ decay the probability estimate yields $w = 3.95 \cdot 10^{-1}$ sec $^{-1}$. The ratio R is obtained as $(1.01 \pm 0.03) \cdot 10^{-8}$; as compared with the various experimental R-values it is closest to that determined in Dubna;
 $R = (1.1^{+1.0}_{-0.5}) \cdot 10^{-8}$ (Phys. Lett., 1, 138, 1962). There are 11 figures

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki (Institute of Theoretical and Experimental Physics)

SUBMITTED: November 12, 1962

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ACCESSION NR: AP4042585

S/0056/64/046/006/2202/2211

AUTHORS: Berkov, A. V.; Nikitin, Yu. P.; Terent'yev, M. V.

TITLE: Regge poles in the amplitude of vector meson production

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 6, 1964, 2202-2211

TOPIC TAGS: V particle, Regge pole, omega meson, meson reaction, differential cross section

ABSTRACT: Continuing an earlier analysis of the spin structure of inelastic-process amplitudes (ZhETF v. 45, 1585, 1963), the authors investigate the spin structure of the amplitude for the production of the ω^0 mesons in the reaction $\pi + N \rightarrow N + \omega^0$, from the point of view of the hypothesis of moving poles in the angular-momentum complex plane. Under the assumption that one pole makes the predominant contribution at high energies, the authors calculate the differential cross section of the reaction, the polarization of the

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produced vector mesons, and also the angular distribution of the products of the decay $\omega^0 \rightarrow \pi^0 + \gamma$. The polarization of the ω^0 meson is investigated under various assumptions concerning the mutual placement of the Regge poles corresponding to different quantum numbers in the t-channel of the reaction. In addition, the production of the ω^0 meson at zero angle is considered separately, since it has distinct properties. All the results are applicable without noticeable modification to the production of p mesons in analogous reaction, but it is pointed out that the large width of p-meson resonance casts some doubts on the applicability of the Regge method p-meson production. "The authors thank V. D. Mur, I. Ya. Pomeranchuk, and K. A. Ter-Martirosyan for useful discussions." Orig. art. has: 38 formulas.

ASSOCIATION: None

SUBMITTED: 17Jan64

SUB CODE: NP

Card: 2/2

NR REF Sov: 007

ENCL: 00

OTHER: 002

ACCESSION NR: AP4043653

8/0056/64/047/002/0744/0749

AUTHORS: Ioffe, B. L.; Terent'yev, M. V.

TITLE: Region of applicability of perturbation theory in the electrodynamics of vector bosons

SOURCE: Zh. eksper. i teor. fiz., v. 47, no. 2, 1964, 744-749

TOPIC TAGS: electrodynamics, quantum field theory, perturbation theory, polarization, photon, scattering cross section, vector meson

ABSTRACT: In view of recent speculations on the possibility that weak interaction is produced by the exchange of a charged vector meson, the authors derive an exact energy limit above which the various quantities involved in the electrodynamics of the vector meson (vertex function, scattering amplitude) cannot be described by the first approximation of perturbation theory without contradicting the fundamental principles of quantum field theory. The

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treatment is carried out both for the case in which the vector meson has an anomalous magnetic moment (of the order of unity), and for the case in which there is no such anomalous moment. The criterion is derived by considering two effects -- the polarization of vacuum due to vector mesons, and the scattering of a positive vector meson by a negative vector meson. The analysis of the polarization of vacuum yields a limit on the mass of a virtual photon, above which the vertex function for the decay of the virtual photon into two vector mesons must differ greatly from its unperturbed value, so that the electromagnetic interaction of the meson must begin to cut off. The scattering of positive vector mesons by negative vector mesons yields an energy limit above which the cross section for this scattering, calculated in the first approximation of perturbation theory, exceeds the unitarity limit. "The authors thank B. V. Geshkenbeyn, I. Yu. Kobzarev, Yu. P. Nikitin, L. B. Okun', I. Ya. Pomeranchuk, and A. P. Rudik for useful discussions." Orig. art.

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ACCESSION NR: AP4043653

ASSOCIATION: None

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ENCL: 00

SUB CODE: NP

NR REF Sov: 002

OTHER: 004

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CIA-RDP86-00513R001755330009-8

TERENT'EV, M.V.

Possible nonconservation of combined parity in weak interactions.
Usp. fiz. nizk. 83 no. 1:109-181 Ja '65. (WRA 1612)

APPROVED FOR RELEASE: 07/16/2001

CIA-RDP86-00513R001755330009-8"

"APPROVED FOR RELEASE: 07/16/2001

CIA-RDP86-00513R001755330009-8

TERENT'YEV, M.V.

$K_2 \rightarrow 2\pi$ decay and the possible nonconservation of CP-parity.
Usp. fiz. nauk 86 no.2:231-262 Je '65. (MIRA 18:6)

APPROVED FOR RELEASE: 07/16/2001

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ACCESSION NR: AT5022124

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B41

AUTHORS: Vladimirovskiy, V. V.; Terent'yev, M. V.

TITLE: Regeneration phenomena and a complete experiment in a K_0 meson beam

SOURCE: USSR. Gosudarstvennyy komitet po ispol'zovaniyu atomnoy energii. Institut teoreticheskoy i eksperimental'noy fiziki. Doklady, no. 323, 1965. Yavleniya regeneratsii i polnyy opyt v puchke K_0 mezonov, 1-15

TOPIC TAGS: meson beam, K meson

ABSTRACT: Regeneration phenomena in a neutral K meson beam are studied, and formulas are derived for determining parameters characterizing regeneration and the nature of parity nonconservation. The aim of the work is to find a set of experiments that would, in principle, be sufficient for determining a number of parameters characterizing CP (and perhaps CPT) parity nonconservation in the decay of neutral K mesons. The value ϵ can be determined in experiments in the dependence of $K \rightarrow 2\pi$ decay upon time. The parameter $(1+x)\beta$ can be determined in experiments in regeneration with a thick plate of a heavy material placed in a K beam. The differences between the masses of the short-lived and long-lived mesons must be established from experiments in regeneration with two thick plates in conjunction with

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tests to determine the admixture of \bar{K} mesons in the beam. The value x can be determined by determining the admixture of K mesons as a function of time. The formulas

$$A_{2\pi}(t) = \langle 2\pi | K_S \rangle K_S(0) \exp(-\lambda_e t_0) [(1+x) \beta \exp(-\lambda_s t) + c \exp(-\lambda_e t)]$$

$$\beta = R(\lambda_s - \lambda_e) t_0 = \frac{e\pi N}{m\gamma} (A - \bar{A}) t_0 /$$

$$A_{2\pi}^{(1)}(t_0) = \langle 2\pi | K_S \rangle K_S(0) \exp(-\lambda_s t_0) [(1+x) R + e]$$

$$A_{2\pi}(t) = \langle 2\pi | K_S \rangle K_S(0) [$$

$$+ [\beta(1+x) \bar{e}^{\lambda_s t} (\bar{e}^{-\lambda_e T} + \bar{e}^{-\lambda_s T}) + c \bar{e}^{\lambda_e t} - \bar{e}^{\lambda_s T}]]$$

$$w(e) = f(A, t) \bar{e}^{\lambda_s^2} + A^2 +$$

$$+ 2\alpha f(A, t) \bar{e}^{\lambda_s/2} [\cos(\alpha(e-\varphi)) - \bar{e}^{\lambda_s/2} \cos(\alpha(e-t)-\varphi)]$$

$$\frac{n_{\pi\pi}}{15n_{K\bar{K}}} = Y\pi N e \frac{1}{p^2/(8\beta)^2} \left[1 + \frac{e}{\beta(1+x)} \right]^2$$

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L 3828-66
ACCESSION NR: AT5022124

allow determination of $R(\beta)$ when ϵ , x , and the mass difference of K_s and K_1 are known, and determination of ϵ when R , X , and Δ are known. The formulas are also easily used to determine the mass difference when ϵ , β , and x are known. The authors thank L. Okun', M. Balata, V. Lyuboshits, E. Okonov, M. Podgoretskiy, and Teung Fang. Orig. art. has 17 formulas, 2 diagrams, and 2 graphs.

ASSOCIATION: none

SUB CODE: NP

ENCL: 00

OTHER: 006

SUBMITTED: 20Feb65

NO REF Sov: 006

cc
Card 3/3

L 2757-66 EWT(m)/T/EWA(m)-2
ACCESSION NR: AP5024340

UR/0367/65/002/002/0265/0274

AUTHOR: Vladimirskiy, V. V.; Terent'yev, M. V.

TITLE: Regeneration effects and a complete experiment in a K^0 -meson beam

SOURCE: Yadernaya fizika, v. 2, no. 2, 1965, 265-271

TOPIC TAGS: parity principle, nuclear physics, K meson

ABSTRACT: The authors suggest a set of experiments (each of which has, as a rule, been previously proposed in the literature for verifying various models explaining CP -parity nonconservation) which would theoretically be sufficient for determining all the parameters pertaining to nonconservation of CP - and CPT -parity in neutral K -meson decay. Since interference phenomena in regeneration processes give several possibilities for studying the nature of CP -parity violation, the authors analyze the regeneration of short-lived components in a medium without any suppositions about the symmetric properties of the mass operator. "In conclusion, the authors are sincerely grateful to L. Okun', who initiated this work, to M. Balata for consultation, and to workers in the mathematics department of the ITEF for doing the computation. The authors express their deep gratitude to V. Lyuboshits, E. Okonov,

Card 1/2

L 2757-66

ACCESSION NR: AP5024340

M. Podgoretskiy and U Tzun Fan' for discussing their work before publication."
Orig. art. has: 4 figures, 14 formulas.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki GKIAE (Institute
of Theoretical and Experimental Physics, GKIAE)

SUBMITTED: 15Mar65

ENCL: 00

SUB CODE: NP

NO REF Sov: 005

OTHER: 006

Card 2/2

L 00537-66 EWT(m)/T/EWA(m)-2

ACCESSION NR: AP5016100

UR/0053/65/086/002/0231/0262
539.12.01

AUTHOR: Terent'yev, M. V.

17
B

TITLE: Kaon decay into two pions and possible CP nonconservation

SOURCE: Uspekhi fizicheskikh nauk, v. 86, no. 2, 1965, 231-262

TOPIC TAGS: K meson, pion, meson interaction, parity principle

ABSTRACT: This review article discusses the physical consequences of the important observation of the decay of a K meson into two pions by a group at Princeton (J. Christenson et al, Phys. Rev. Letts. v. 13, 138, 1964), and its bearing on the various parity conservation laws. The $K \rightarrow 2\pi$ decay is accepted as an undisputed fact. Section I of the survey gives a general treatment of the phenomena of decay and interference in a K-meson beam. Section II is devoted to the nature of the information which follows from the data of the Princeton group. Along with the existence of the $K \rightarrow 2\pi$ decay, the smallness of the observed effect is explained, since the decay of the long-lived component of the K-meson beam (K_L) is 4×10^{-6} of the short-lived component (K_S). In Section III there is a discussion of attempts to explain the experiment on the basis of a hypothesis of the existence in nature of new fields whose forces have a macroscopic range. It is assumed here that CP is rigorously conserved. In Section IV are reported attempts to explain

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L 00537-66

ACCESSION NR: AP5016100

the experiment on the basis of various mechanisms of breakdown of CP invariance. Although all the models considered are regarded as too speculative to describe correctly the actual situation, it is believed that their consideration is important for indicating various specific lines to follow in further experimental study of the problem. Section V is devoted to interference phenomena which may arise if the long-lived component K_L can decay into two pions and the amplitudes for the $K_S \rightarrow 2\pi$ and $K_L \rightarrow 2\pi$ decays are coherent, since the resultant interference leads to new features of the time dependence of two-meson decay. In the last section, VI, the authors enumerate various experiments whose performance is necessary in the future in connection with the $K_L \rightarrow 2\pi$ decay and the nonconservation of CP. Orig. art. has: 94 formulas and 1 table.

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: NP, GP

NR REF Sov: 013

OTHER: 031

mlr
Card 2/2

L 807-66 EWT(m)/T/EWA(m)-2
ACC NR: AP5027998

SOURCE CODE: UR/0386/65/002/007/0336/03¹⁰

AUTHOR: Solov'yev, V. V.; Terent'yev, M. V.

ORG: none

TITLE: Charge asymmetry in radiative decays of K- and p-mesons upon violation of CP-invariance

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu.
(Prilozheniya), v. 2, no. 7, 1965, 336-340

TOPIC TAGS: parity principle, bremsstrahlung, K meson, pion, photon emission

ABSTRACT: The authors show that no large charge asymmetry will arise under any violation of CP-invariance in meson $\pi^+\pi^-\gamma$ decays if a decay to $\pi^+\pi^-$ without emission of a photon is allowed, and present several quantitative estimates in connection with this statement. It is shown first that in the process $K_1^0 \rightarrow \pi^+\pi^-\gamma$ the charge asymmetry is very small even for strong violation of CP invariance in weak, strong, or electromagnetic interactions. A large asymmetry would mean an unexpectedly large radius of the interaction region, and therefore an experimental investigation of the decay $K_1^0 \rightarrow \pi^+\pi^-\gamma$ is of particular interest. The decays $K_1^+ \rightarrow \pi^+\pi^0\gamma$ are also discussed briefly. If CP-invariance is violated, the probabilities of these decays, and also the spectra of the positive and negative pions, may differ. The asymmetry should be of the order of $8M_D/M_B$, where 8 is a parameter characterizing the degree of CP-parity nonconservation, M_D is the bremsstrahlung amplitude, and M_B is the CP-odd part of the direct photon emission amplitude. Analogous remarks apply also to the decays $K_1^+ \rightarrow$

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L 9807-66

ACC NR: AP5027998

$\pi^\pm K^0 \gamma$ and $K^*\pm \rightarrow K^\pm \pi^0 \gamma$. However, the difference in the form of the spectrum of the particles and antiparticles is large in the case of K^\pm mesons, since M_D for $K^\pm \rightarrow \pi^\pm \pi^0 \gamma$ has an additional degree of smallness, due to the rule $BT = 1/2$. Authors are deeply grateful to L. B. Okun' for many valuable remarks. Orig. art. has: 12 formulas.

SUB CODE: 20/ SUBM DATE: 02Aug65/ ORIG REF: 001/ OTH REF: 003

Card 2/2

L 13117-66 EWT(1)/EWA(m)-2 IJP(c) AT

ACC NR: AR6001773

SOURCE CODE: UR/0386/65/002/010/0466/0469

AUTHOR: Kobzarev, I. Yu.; Okun', L. B.; Terent'yev, M. V.

ORG: Institute of Theoretical and Experimental Physics (Institut teoreticheskoy i eksperimental'noy fiziki)

TITLE: A note on C-odd multipoles

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniya, v. 2, no. 10, 1965, 466-469

TOPIC TAGS: parity principle, photon scattering, electromagnetic interaction, nucleon scattering, deuteron scattering, correlation statistics

ABSTRACT: The authors discuss briefly the possible presence of C-odd terms in vertex parts with $I \geq 1$. When $I = 1$ (e.g., deuteron) this term is shown to vanish for real photons. The effect will therefore be maximal for large-angle scattering of electrons. The coefficients in the term may become small. The smallness connected with the non-elementary nature of the nucleus is manifest in the smallness of the form factor, which can be naturally assumed to be the same for C-even and C-odd terms. Therefore, at large momentum transfer, one can expect correlation effects of the order of unity in the model of J. Bernstein, G. Feinberg, and T. D.

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L 13117-66

ACC NR: AP6001773

Lee (Columbia Univ. Preprint, 1965). It does not follow that the foregoing correlations must be additionally small in electron-deuteron scattering. For light nuclei, however, these effects are small and, furthermore, they can be estimated theoretically to a considerable degree.

For a particle with spin I the number of C-odd multipoles is equal to integer or half-integer. In the general case (taking into account possible parity nonconservation), the number of corresponding multipoles is given in the table. The number of corresponding multipoles N in the third and fourth lines pertains to integer and half-integer I, respectively. The results of the table can be easily obtained by determining the number of states in the t-channel, where the particle and antiparticle with spin I form an "atom" with total angular momentum l. Authors thank I. Ya. Pomeranchuk and B. M. Pontecorvo for useful discussions. L. B. Okun' is grateful to S. Coleman and S. Glashow for interesting discussions in Trieste. Orig. art. has: 2 formulas and 1 table.

SUB CODE: 20/ SUBM DATE: 28Sep65/ OTH REF: 003

Card 2/2 HU

CP	+1	-1	+1	-1
P	+1	+1	-1	-1
N	$2I + 1$	I	I	$2I$
	$2I + 1$	$I - 1/2$	$I + 1/2$	$2I$

L 29670-66 EWT(1)/T IJP(c)
ACC NR: AT6012696

SOURCE CODE: UR/3138/65/000/385/0001/0011

AUTHOR: Kobzarev, I. Yu.; Okun', L. B.; Terent'yev, M. V.

ORG: Institute of Theoretical and Experimental Physics of the State Committee
on the Use of Atomic Energy SSSR, Moscow (Institut teoreticheskoy i eksperimental'-
noy fiziki Gos. komiteta po ispol'zovaniyu atomnoy energii SSSR)

TITLE: Remark concerning C-odd multipoles

SOURCE: USSR. Gosudarstvenny komitet po ispol'zovaniyu atomnoy energii. Institut
teoreticheskoy i eksperimental'noy fiziki. Doklady, no. 385, 1965. Zamechaniye
o C-nechetnykh mul'tipolyakh, 1-11

TOPIC TAGS: parity principle, elementary particle, electron scattering, boson,
fermion, nuclear spin, quantum electrodynamics

ABSTRACT: The authors discuss the possibility of the presence of C-odd terms in
the vertices of particles of angular momentum $J \geq 1$ and show that in the case of
particles with spin $J > 1/2$ the violation of charge invariance in electrodynamics
leads to the appearance of C-odd form factors. The number of such form factors is
equal to $J - 1/2$ for fermions and J for bosons. The presence of a C-odd and ver-
tex parts with $J \geq 1$ can give rise to certain correlations which might become ob-

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L 29670-66
ACC NR: AT6012696

2

servable in the case of electron scattering through large angles. Other possible experiments which would make it possible to determine the presence of C-odd form factors are discussed. The authors thank I. Ya. Pomeranchuk and B. M. Pontecorvo for useful discussions. Orig. art. has: 2 formulas and 1 table.

SUB CODE: 20/ SUBM DATE: 15Sep65/ OTH REF: 003

Card 2/2 CW

L 35126-66 EWT(1) AT

ACC NR: AP6018819

SOURCE CODE: UR/0056/66/050/005/1393/1409

AUTHOR: Perelomov, A. M.; Popov, V. S.; Terent'yev, M. V.

ORG: none

TITLE: Ionization of atoms in an a-c field

SOURCE: Zh. eksper. i teor. fiz., v. 50, no. 5, 1966, 1393-1409

TOPIC TAGS: atom, ionization, approximation method, adiabatic approximation, bound state, electromagnetic wave polarization, Coulomb interaction, alternating current

ABSTRACT: A method has been developed for calculating the ionization probability of the bound state under the effect of an a-c field. The method is valid under the conditions $F \ll F_0$, $\omega \ll \omega_0$ (ω and F are the frequency and amplitude of the external field, $\omega_0 = \chi^2/2$ and $F_0 = \chi^3$ are the respective atomic quantities). The quasi-classical nature of the motion of a particle in a homogeneous electric field has been exploited in the method which extends the usual quasi-classical approximation to the nonstationary case. The adiabatic approximation

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L 36126-66

ACC NR: AP6018819

in the ionization problem has been first considered (for a frequency range $\omega \ll \omega_t$, where $\omega_t = F/\chi$ is the tunnel frequency). Formulas for the probability of ionization of an arbitrary atom by the field of a plane or elliptically polarized wave have been derived. The model problem of ionization of a bound state in a one-dimensional potential has been investigated in detail for arbitrary values of the "adiabaticity parameter" $\gamma = \omega/\omega_t$. Formulas have been derived for the probability of ionization of an arbitrary bound state under the action of an a-c field. The cases of plane and circular polarization of electromagnetic waves have been considered (Coulomb interaction between electron and atomic cores at large distances ($X_r \gg 1$) has been disregarded. The total ionization probability can be expressed as the sum of multiphoton processes. Within the low-frequency limit ($\omega \ll \omega_t$), the formulas obtained become adiabatic approximation formulas. Orig. art. has: 75 formulas. [Based on authors' abstract] [AM]

SUB CODE: 20/ SUBM DATE: 06Dec65/ ORIG REF: 011/ OTH REF: 005

Cord 2/2 111

ACC NR: AP6024892

SOURCE CODE: UR/0056/65/051/001/0309/0326

AUTHOR: Perelomov, A. M.; Popov, V. S.; Terent'yev, M. V.ORG: Institute of Theoretical and Experimental Physics (Institut teoreticheskoy i eksperimental'noy fiziki)TITLE: Ionization of atoms in a varying electric field. II.SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 51, no. 1, 1966, 309-326

TOPIC TAGS: ionization, ionization probability, field ionization, multiphoton ionization, ELECTRIC FIELD, ATOM

ABSTRACT: Ionization produced in a system bound by short-range forces induced by an electromagnetic wave with arbitrary elliptic polarization is investigated. In the case of a weak field $F \ll F_0$, $\omega \ll \omega_0$ (F_0 is the intra-atomic field, ω_0 is a characteristic atomic frequency) formulas are derived for the ionization probability expressed as a sum of probabilities of multi-photon process. A formula is also obtained for the momentum spectrum of the emitted electrons. Transition to the adiabatic approximation for the case of low frequencies ($\gamma \ll 1$) is considered. Asymptotic formulas are obtained for the total ionization probability in the "anti-adiabatic" case ($\gamma \gg 1$). It is shown that with an increase in ellipticity ϵ of the incident light the ionization probability decreases, other conditions being equal.

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ACC NR AP6024892

In the limiting cases of $\epsilon = 0$ (linear polarization) and $\epsilon = \pm 1$ (circular polarization) the formulas obtained are equal to those derived by the authors in an earlier paper (Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 50, 1966, 1393). A simple quasiclassical method for obtaining the main (exponential) factor in the formula for the ionization probability is presented. Some properties of the solutions of the Shroedinger equation for potentials with a Coulomb tail are discussed. Orig. art. has: 71 formulas and 6 figures. [CS]

SUB CODE: 20 / SUBM DATE: 16Feb66 / ORIG REF: 010 / OTH REF: 004

Card 2/2

OYRAKH, O., inzh.; TERENT'YEV, N., inzh.; SHAPIRO, Ya., inzh.

Vibrator for making reinforced concrete underlying slabs.
Na stroy. Mosk. 2 no.6:24 Je '59. (MIRA 12:8)
(Vibrators) (Concrete slabs)

TERENT'YEV, N.

Piecework wages for construction on the "Alarskiy" state farm.
Sel'. stroi. no.7:21-22 '62. (MIRA 15:8)

1. Zamestitel' rukovoditelya sektora TSentral'noy respublikanskoy
normativno-issledovatel'skoy stantsii Ministerstva proizvodstva i
zagotovok sel'skokhozyaystvennykh produktov RSFSR.
(Irkutsk Province--Construction workers--Wages)

SAVENKOV, V., kolkhoznik; DIL'DIN, M.; PANTELEYEV, V.;
TERENT'YEV, N., inzh.

Readers' letters. Sel'. stroi. no.10:30 0 '62. (MIRA 15:11)

1. Nachal'nik ot dela Giproorgsel'stroya (for Dil'din).
2. Nachal'nik ot dela sel'skogo stroitel'stva Gosstroya
Estonskoy SSR (for Panteleyev).
(Construction industry)

SHCHERBAN', A.N., akademik; BUTAYEV, O.A.; FURNAN, N.I.; TERENT'YEV, N.F.

Automatic methane indicator for gas reducer plants and compressor
stations of main gas pipelines. Gas. prom. 4 no.42-45 Ap '59.
(MIRA 12:6)

(Gas, Natural--Pipelines) (Gas detectors)

TSUKERMAN, M.A., kand.med.nauk; VEEKSLER, Ya.I., kand.med.nauk; SIZYAKIN, P.S.;
TEGENT'YEV, N.I.; KORZAN, D.P.; RUMOVSKIY, D.M.; SHEVCHIKS, A.R.,
kand.med.nauk; BRUN, S.A. (Rostov-na-Donu)

Basis for early necrectomy in experimental third degree burns.
Ortop., travn. i protez. 18 no.5:44-49 S-0 '57. (MIRA 12:9)
(BURNS AND SCALDS)

17(12)

SOV/177-58-11-48/50

AUTHORS: Terent'ev, N.I., Lieutenant-Colonel of the Medical Corps, Veksler, Ya.I., Major of the Medical Corps, Candidate of Medical Sciences

TITLE: About the Biological Activity of Penicillin Being Subjected to the Influence of Ionizing Radiation

PERIODICAL: Voyennno-meditsinskiy zhurnal, 1958, Nr 11, p 90 (USSR)

ABSTRACT: The article deals with the study of the biological activity of penicillin being subjected to the influence of ionizing radiation. Investigations were carried out in vitro and in vivo. The amorphous and crystal salt of the antibiotic were tested. The results obtained in vitro confirmed that the amorphous salt of the penicillin after radiation causes a small reduction of activity, from 0.015 to 0.03 un. in 1 ml, especially on the second day following radiation. The crystal salt subjected to the influ-

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SOV/177-58-11-48/50

About the Biological Activity of Penicillin Being Subjected to the Influence of Ionizing Radiation

ence of penetrating radiation did not impair the activity. Observations carried out on animals have shown that the biological activity of penicillin, subjected to penetrating radiation, was not diminished. This fact warrants the conclusion that penicillin may be used for therapeutic purposes also when it is subjected to radiation, but the crystal salt of penicillin is preferred.

Card 2/2

ZHDANOV, P.A., kandidat tekhnicheskikh nauk; TEPENT'YEV, N.K., inzhener;
ERLIKH, Ya.Ye., redaktor; KHITROV, P.A., tekhnicheskiy redaktor

[Collection of important materials regulating safety engineering
and industrial hygiene in railroad transportation] Sbornik vazhnei-
shikh materialov po tekhnike bezopasnosti i promyshlennoi sanitarii
na zhelezodorozhnom transporte. Moskva, Gos. transp. zhel-dor. izd-
vo, 1954. 879 p. [Microfilm]
(Railroads--Safety measures)

(MLRA 8:3)

LOSHCHILIN, Andrey Vasil'yevich; TERENT'YEV, Nikolay Konstantinovich;
TYURIKOV, Aleksandr Ivanovich; RAKITIN, G.A., retsenzent; OZEMBLOVSKIY,
Ch.S., retsenzent; SHCHERBACHEVICH, G.S., retsenzent; SHUSHKOV, P.I., re-
tsenzent; SHILKIN, P.M., retsenzent; FEDOSEYEV, N.P., retsenzent;
RESHETNIKOV, V.Ye., retsenzent; PESKOVA, L.N., red.; ZHDANOV, P.A., red.;
KHITROV, P.A., tekhn. red.

[Safety engineering and industrial sanitation in railroad transportation;
handbook]Tekhnika bezopasnosti i proizvodstvennaiia sanitariia na zhelezno-
dorozhnom transporte; spravochnaia kniga. Pod obshchei red. P.A.Zhdanova.
Moskva, Vses.izdatel'sko-poligr. ob"edinenie M-va putei soobshchenia,
1961. 455 p. (MIRA 14:12)

(RAILROAD—SAFETY MEASURES) (RAILROADS—SANITATION)

LOSHCHININ, A.V.; TERENT'YEV, N.K.; TYURIKOV, A.I.; AFANAS'YEV,
Ye.V., retsentent; PROKHOROV, A.A., retsentent; PESKOVA,
L.N., red.; ZHDANOV, P.A., red.: BOBROVA, Ye.N., tekhn.red.

[Safety measures and industrial hygiene in railroad trans-
portation] Tekhnika bezopasnosti i proizvodstvennaya sanita-
riia na zheleznodorozhnom transporte; spravochnaya kniga.
Izd.2., dop. Moskva, Transzheldorizdat, 1963. 535 p.
(MIRA 17:2)

PHASE I

TREASURE ISLAND BIBLIOGRAPHICAL REPORT

AID 559 - I

BOOK

Call No.: AF633693

Authors: FADDEYEVA, V. N. and TERENT'YEV, N. M.

Full Title: TABLES OF THE VALUES OF THE FUNCTION $W(z) = e^{-z^2} \left(1 + \frac{2i}{\pi} \int_0^{\infty} e^{tz^2} dt \right)$
(INTEGRAL OF PROBABILITIES) OF A COMPLEX ARGUMENTTransliterated Title: Tablitsy znachenii funktsii $W(z) = e^{-z^2} \left(1 + \frac{2i}{\pi} \int_0^{\infty} e^{tz^2} dt \right)$
(integrala veroyatnostey) ot kompleksnogo argumenta

PUBLISHING DATA

Originating Agency: Academy of Sciences, USSR. Mathematical Institute im. V. A. Steklov. Leningrad Section

Publishing House: State Publishing House of Technical and Theoretical Literature

Date: 1954 No. pp.: 268 No. of copies: 4,000

Editorial Staff

Editor: Academician V. A. Fok Contributors: K. I. Grishmanovskaya,
N. A. Poznakhirkо and V. I. Mikhailova

PURPOSE: For use in various sections of mathematical physics: in the theory of propagation of electromagnetic waves, in quantum mechanics, in spectroscopy and astrophysics.

TEXT DATA

Coverage: In the preface, Academician Fok, the editor, writes that in contemporary literature there are no adequate tables which give the values of function $w(z)$ in a broad domain of the changes of the variable z . In the introduction, the compilers explain the presentation of the function $w(z)$ in the form of integrals, in the

1/2

Tablitsy znacheniy funktsii $w(z)$
(integrala veroyatnostey) ot kompleksnogo argumenta

AID 559 - I

form of Taylor's series, and by the introduction of continued fractions (Chetyshov, Posse, Markov, Stieltjes). Then follows the method of computation of the tables, the method of their use, and the determination of the values of the function $w(z)$ outside of the limits of the tables. The tables give the values of the function $w(z)$ with six decimals for the variables $u(x,y)$, $\Delta u, \Delta v, \Delta \bar{u}, \Delta \bar{v}$ with 50 values of x and two corresponding values of y on each page: table I (pp. 192-48) for the square $0 \leq x \leq 3$, $0 \leq y \leq 3$; and table II (pp. 249-268) for the region $3 \leq x \leq 6, 0 \leq y \leq 3; 0 \leq x \leq 3, 3 \leq y \leq 6$.
No. of References: Total 16, 1886-1949, of which 10 are Russian, some already translated.

Facilities: Computations were made on the key and computing analytical machines of the Institute.

2/2

On calculating visible positions of...

S/035/62/000/008/016/090
A001/A101

✓B

to come. To take into account parallaxes of stars (in necessary cases) and changes of refraction within a year, small corrections were introduced into small letters. Visible positions at the culmination instant at Pulkovc were calculated by Bessel's formula by means of an electronic computer 9B-80-3 (tV-80-3) receiving initial data from standard 80-column punched charts. It is noted that switching of calculations to analytical and electronic computers increased the accuracy of results on account of increasing the number of reserve symbols in formulae, and also allowances for parallax and changes of refraction within the year.

Kh. Potter

[Abstracter's note: Complete translation]

Card 2/2

SOURCE: Leningrad. Politekhnicheskiy Institut. Trudy, no. 248, 1963.

L 5774-15
ACCESSION NR: AT5015707

L 577 (Rev.)
ACCESSION NR: AT5015707

calculating the γ -ray spectrum the singular point was taken into account, and the technique of computer simulation was used.

Fig. 1. The "Lamb's Head" of the *Leucostethus*.

二〇一〇年

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APPROVED FOR RELEASE: 07/16/2001

CIA-RDP86-00513R001755330009-8"

ALEKSEYEV, Yu.B., glavnnyy zootehnik pavil'ona; KONDRASHOV, L.A., metodist pavil'ona; TEPERULYEV, N.M., otvetstvennyy redaktor; AZAROVA, O.A., redaktor; ZUBRILINA, Z.P., tekhnicheskiy redaktor

[The "Horse Breeding" pavilion; a guidebook] Pavil'on "Konevodstvo"; putevoditel'. Moskva, Gos. izd-vo selkhoz. lit-ry, 1956. 19 p.
(MIRA 9:12)

1. Moscow. Vsesoyuznaya sel'skokhozyaystvennaya vystavka, 1954-
(Moscow--Horse breeding--Exhibitions)

PETROVA, Ye., metodist pavil'ona; TERYENT'YEV, N., otvetstvennyy redaktor;
BYRDINA, A.S., redaktor; PAVLOVA, M.M., tekhnicheskiy redaktor

["Swine breeding" pavilion; a guidebook] Pavil'on "Svinovodstvo";
putevoditel'. Moskva, Gos. izd-vo selkhoz. lit-ry, 1956. 22 p.
(MLRA 9:9)

1. Moscow. Vsesoyuznaya sel'skokhozyaystvennaya vystavka, 1954-
(Moscow--Swine breeding--Exhibitions)

SUSHCHEVSKIY, M.O., glavnyy metodist; UDACHIN, D.A.; TERNIT'YEV, N.N.,
otvetstvennyy redaktor; ORETSOV, P.P., redaktor; SOKOLOVA, N.N.,
tekhnicheskiy redaktor

["Russian Soviet Federated Socialist Republic" pavilion; a guide-
book] Pavil'on "Rossiiskaya Sovetskaya Federativnaya Sotsialisti-
cheskaya Respublika"; putesvoditel'. Moskva, Gos. izd-vo selkhoz.
lit-ry, 1956. 30 p. (MIRA 9:8)

1. Moscow. Vsesoyuznaya sel'skokhozyaystvennaya vystavka, 1954-
2. Direktor pavil'ona (for Udachin)
(Moscow--Agricultural exhibitions)

TERENT'YEV, N.N., red.; GRIGOR'YEVA, Ye.I., tekhn.red.

[Grain crop varieties adapted for Kirghizistan, Tajikistan, Turkmenistan, and Uzbekistan] Sorta zernovykh kul'tur, raionirovannye dlia Kirgizskoi, Tadzhikskoi, Turkmenskoi i Uzbekskoi SSR. Moskva, Fotoizdat VSMKhV, 1957. 19 p.

(MIRA 14:1)

1. Moscow. Vsesoyuznaya sel'skokhozyaystvennaya vystavka.
(Soviet Central Asia--Grain--Varieties)

TEREMT'YEV, N.N., red.; GRIGOR'YEVA, Ye.I., tekhn.red.

[Varieties of grain, groat, and pulse crops and corn adapted for the Ural Mountain region] Sorts zernovykh, krupianykh, zernobobovikh kul'tur i kukuruzy, raionirovannye dlia Urala. Moskva, Foto-izdat VSKHV, 1957. 20 p.
(MIRA 14:1)

1. Moscow. Vsesoyuznaya sel'skokhozyaystvennaya vystavka.
(Ural Mountain region--Grain--Varieties)
(Ural Mountain region--Corn (Maize)--Varieties)
(Ural Mountain region--Legumes--Varieties)

TERENT'YEV, N.M., red.; GRIGOR'YEVA, Ye.I., tekhn.red.

[Field crop varieties adapted for the White Russian S.S.R.;
collection of the Main Pavilion] Sorta sel'skokhoziaistvennykh
kul'tur, raionirovannye dlia Belorusskoi SSR; kolleksiia Glav-
nogo pavil'ona. Moskva, Fotoizdat VSKHV, 1957. 23 p.

(MIRA 14:1)

1. Moscow. Vsesoyuznaya sel'skokhozyaystvennaya vystavka.
(White Russia--Field crops--Varieties)

TERENT'YEV, N.N., red.; GRIGOR'YEVA, Ye.I., tekhn.red.

[Field crop varieties adapted for the Far East; collection of the Main Pavilion] Sorta sel'skokhozyaystvennykh kul'tur, raionirovannye dlia Dal'nego Vostoka; kolleksiia Glavnogo pavil'ona. Moskva, Fotoizdat VSEHV, 1957. 26 p.

(MIRA 14:1)

1. Moscow. Vsesoyuznaya sel'skokhozyaystvennaya vystavka.
(Soviet Far East--Field crops--Varieties)

TERENT'YEV, N.N., red.; GRIGOR'YEVA, Ye.I., tekhn.red.

[Varieties of grain, groat, and pulse crops and corn adapted for the Central Black Earth Region; collection of the Main Pavilion] Sorta zernovykh, krupienykh, zernobobovykh kul'tur i kukuruzy raionirovannye dlja raionov TSentral'no-chernozemnoi polosy; kollektsiia Glavnogo pavil'ona. Moskva, Fotoizdat VSKHV, 1957. 27 p. (MIRA 14:1)

1. Moscow. Vsesoyuznaya sel'skokhozyaystvennaya vystavka.
(Central Black Earth Region--Field crops--Varieties)

TERENT'YEV, N.N., red.; GRIGOR'YEVA, Ye.I., tekhn.red.

[Grain and corn varieties adapted for the Ukraine and Moldavia;
collection of the Main Pavilion] Sorta zarnovykh kul'tur i
kukuruzy, raionirovannye dlja Ukrainskoj i Moldavskoj SSR;
kollektaiia Glavnogo pavil'ona. Moskva, Fotoizdat VSMKhV, 1957.
28 p. (MIRA 14:1)

1. Moscow. Vsesoyuznaya sel'skokhozyaystvennaya vystavka.
(Ukraine--Grain--Varieties) (Moldavia--Grain--Varieties)

TERENT'YEV, N.N., red.

[Practices of the best cattlemen; a collection of articles] Iz opyta
luchashikh skotovodov; sbornik statei. Moskva, Gos.izd-vo selkhoz.
lit-ry, 1957. 181 p.
(Cattle)

TERENT'YEV, N.N.

All-Union Agricultural Exhibition as an effective means for disseminating and introducing advanced practices. Nauka i pered.op.
v sel'khoz. 7 no.1:64-66 Ja '57. (MLRA 10:2)

1. Zamestitel' direktora Vsesoyuznoy sel'skokhozyaystvennoy vystavki.
(Moscow--Agricultural exhibitions)

TERENT'EV, N.N.

AUTHOR: Terent'ev, N.N., Engineer.

104-2-9/38

TITLE: The parallel operation of cooling ponds and sprays.
(Parallel'naya rabota prudov-okhladiteley i bryzgal)

PERIODICAL: "Elektricheskie Stantsii" (Power Stations), 1957,
Vol. 28, No.2, pp. 41 - 43 (U.S.S.R.)

ABSTRACT: Most of the large Soviet power stations located outside cities used ponds for cooling. When power stations are extended the existing ponds are not always big enough and their size cannot easily be increased and therefore additional coolers are installed. Sprays have great advantages for this kind of work and as the additional coolers work only intermittently and so the woodwork of cooling towers would rapidly deteriorate. The article describes operating results with sprays installed over a pond. At one power station it was proposed to pass half the cooling water through the sprays. The first design provided for a spray tank on the shore, but this idea was based on a misconception of pre-war experience and it was therefore decided to construct the sprays over the pond. Tests showed that with full load on the generators in summer the increased cooling of the water was 1.5 - 2.0 C, with one section working, 3.3 - 3.8 C with two sections and 4.5 - 5.0 C with all three sections working. This made it

Card 1/2

104-2-9/38

The parallel operation of cooling ponds and sprays. (Cont.)

possible to load the generators fully, which had formerly not been possible because of poor vacuum. A second installation is also described in which sprays installed over the pond take 30 000 m³/hour of water which is 35% of the whole circulation. Correct choice of nozzle size was found to be important and finally additional cooling of 3.6 C was obtained with all sections working. It was then found possible to reduce the diameter of the pump runners with great power economy. It is concluded that the use of sprays has been fully justified. The sprays should be installed on the banks of the pond or above it as close as possible to the water intake. Sprays work most efficiently when cooling water in parallel with the pond, or in series in the order pond-spray. The use of special evolvent nozzles 50 mm diameter is recommended. The sprays should be installed at least 3 m above the pond with a spray density of not more than 0.8 m³/m²/hr and a head of 7-10 m. Several other similar installations are now being built. There are 4 figures and 1 Slavic reference.

AVAILABLE:

Card 2/2

TERENTEV, N.N.

AUTHOR: Terentev, N.N., Engineer. 104-4-29/40
TITLE: The operation of spray type cooling towers. (Rabota bryzgalnykh gradiren)
PERIODICAL: "Elektricheskie Stantsii" (Power Stations), 1957,
Vol. 28, No.4, pp. 84 - 85 (U.S.S.R.)
ABSTRACT: Cooling towers are employed at a number of thermal power stations with a circulatory cooling water system. They were particularly widely used before the war. Many of these cooling towers are now in need of major reconstruction. They are usually reconstructed according to the old design but in a number of cases, particularly if timber is short, or if the time available for repair is limited, or the cooling tower is only operated periodically, so that wood soon rots, it may be advisable to reconstruct a drop type cooling tower by replacing the water distribution and sprinkling structure by sprays. Examples of this are quoted and it is shown that the work can be carried out very much more cheaply and quickly than reconstruction in the initial form. In summer the cooling is not quite as good with sprays as with a wooden structure. Some difficulties have been met with freezing and carry over of water causing icing in winter. It is proposed to improve the cooling by arranging for better
1/2

104-4-29/40

The operation of spray type cooling towers. (Cont.)
access of air to the central part of the cooling tower. The
use of sprays in cooling towers is particularly to be recom-
ended where the equipment is only used intermittently and in
this case it may be advisable to use it in the construction of
new towers.

2/2 AVAILABLE:

TERENT'YEV, N.N., red.; ORIGOR'Yeva, Ye.I., tekhn.red.

[Varieties of grain and pulse crops and corn adapted for Siberia;
collection of the Main Pavilion] Sorts krupianykh, zernobobovykh
kul'tur i kukurny, raionirovannye dlja Sibiri; kolleksija
Glavnogo pavil'ona. Moskva, Fotoizdat VSKHV, 1958. 15 p.

(MIRA 14:1)

1. Moscow. Vsesoyuznaya sel'skokhozyaystvennaya vystavka.
(Siberia--Grain--Varieties)
(Siberia--Corn (Maize)--Varieties) (Siberia--Legumes--Varieties)

TERENT'YEV, N.N., red.; GRIGOR'YEVA, Ye.I., tekhn.red.

[Grain crop varieties adapted for the Southeast; collection of
the Main Pavilion] Sorts zernovykh kul'tur, raionirovannye dlia
IUGo-Vostoka; kollektaiia Glavnogo pavil'ona. Moskva, Fotoizdat
VSKHV, 1958. 15 p. (MIRA 14:1)

1. Moscow. Vsesoyuznaya sel'skokhozyaystvennaya vystavka.
(Volga Valley--Grain--Varieties)

TERENT'YEV, N.N.

Session of the All-Union Lenin Academy of Agricultural Sciences
devoted to the new problems of the agricultural science. Zhivotno-
voda 20 no.6:88-90 Je '58. (MIRA 11:6)
(Agriculture)

LAZUTKIN, Ye.S., kand.ekon.nauk; TERENT'YEV, N.N., zootehnik

Problems in economic accountability and the reduction of costs
in collective farm stockbreeding. Zhivotnovodstvo 20 no.9:
8-15 S '58. (MIRA 11:10)

(Stock and stockbreeding)

TERENT'YEV, Makar Leont'yavich; KARPOV, Konstantin Dmitriyevich;
KATSNEL'SON, S.M., red.; ATROSHCHENKO, L.Ye., tekhn.red.

[Make better use of all possibilities in agriculture] Polnec
ispol'zovat' rezervy v sel'skom khoziaistve. Moskva, Izd-vo
"Znanie," 1960. 37 p. (Vsesoiuznoe obshchestvo po rasprostra-
neniu politicheskikh i nauchnykh znanii. Ser.5, Sel'skoe
khoziaistvo, no.4) (MIRA 1):2
(Agriculture)

17(2)

SOV/177-58-11-35/50

AUTHOR: Terent'yev, N.T., Senior Lieutenant of the Medical Corps

TITLE: Change of the Blood in Acute Catarrhs of the Upper Respiratory Channels

PERIODICAL: Voyenno-meditsinskiy zhurnal, 1958, Nr 11, p 85 (USSR)

ABSTRACT: In the 1955/56 period, 150 patients suffering from acute catarrhs of the respiratory channels were observed. In the first or second day the blood was investigated. The preliminary data of the observations of the dynamics of E.S.R. and leucocytes showed that their normalization begins only after 4 to 6 days following defervescence. There was no leucocyte formula in the dynamics observed. Simultaneously with the investigations of the blood, the author carried out hemagglutination reaction and rhinocytodiagnosis which resulted in recognizing three cases of influenza.

Card 1/1

TERENT'YEV, N. T.

Case of Q fever. Klin. med. 40 no. 7:129 J1 '62.

(MIRA 15:7)

(Q FEVER)

TERENT'YEV, N.T.

Technique of rectoromanoscopy. Sov. med. 27 no.2:139 P '64.
(MIRA 17:10)

TERENT'YEV, O.A., inzh.

Investigation of internal processes of compound hydraulic torque
converters. Vest.mashinostr. 43 no.8:30-37 Ag '63. (MIRA 16:9)
(Oil-hydraulic machinery--Testing)

APPENDIX C (Continued) (Continued) (Continued)

Thermophysical properties of some products of heat sugar
manufacture. Plastich. prom. no. 2361-69. 16pp. (MIPA 18:11)

2. Kiyevskiy tekhnologicheskiy institut priobrery programu po
roditse.

TERENT'YEV, O.V. [deceased]; ZENKOV, M.V.

Using adhesive sand and gravel well-point filters in lowering the
water table in soils. Osn., fund. i mekh. grun. no.1:24-26 '59.

(MIRA 12:7)

(Water, Underground) (Filters and filtration)
(Pumping machinery)

LEVIN, Boris Mikhaylovich; TERENT'YEV, P., redaktor; MUKHIN, Yu. tekhnicheskij redaktor

[All-out development of heavy industry is the general line of the Communist Party of the Soviet Union] Vsemernoe razvitiye tiazheloi industrii - general'naja linija KPSS. Moskva, Gos. izd-vo polit. lit-ry, 1956. 109 p.
(Russia--Economic policy) (MLRA 9:11)

REF ID: A6747

STHUMILIN, Stanislav Gustavovich, akademik; TERENT'YEV, P., redaktor;
DANILINA, A., tekhnicheskiy redaktor

[Problems in the economics of labor] Problemy ekonomiki truda.
Moskva, Gos. izd-vo polit. lit-ry, 1957. 733 p. (MLRA 10:4)
(Economics) (Labor and laboring classes)

STRUMILIN, Stanislav Gustavovich, akademik; TERENT'YEV, P., red.;
MUKHIN, Yu., tekhn.red.

[Studies on the socialist economy of the U.S.S.R., 1929-1959]
Ocherki sotsialisticheskoi ekonomiki SSSR, 1929-1959 gg.
Moskva, Gos.izd-vo polit.lit-ry, 1959. 419 p. (MIRA 12:10)
(Russia--Economic conditions)

GANSHTAK, Vladimir Iosifovich, kand. ekonom. nauk, dots.;
ROZENBERG, Ivan Aleksandrovich, kand.ekonom. nauk, dots.;
TERENT'YEV, P., red.; TROYANOVSKAYA, N., tekhn. red.;
SERBIN, Ye., tekhn. red.

[Means for improving the management of an industrial
enterprise] Puti sovershenstvovaniia upravleniia promysh-
lennym predpriatiem. Moskva, Gospolitizdat, 1962. 190 p.
(MIRA 15:7)

I. Ural'skiy politekhnicheskiy institut (for Ganshtak, Rozen-
berg).

(Industrial management)

KOST, A., doktor khimicheskikh nauk; TERENT'YEV, P., kand. khimicheskikh nauk

Treasures of the methane family. Nauka i zhizn' 30 no.9:8-9,
32 b-c S '63. (MIRA 16:10)

KOST, A.N.; TERENT'YEV, P.B.; BYR'KO, V.M.

Hexamethylenedithiocarbamic acid and its derivatives. Vest.Mosk.
un.Ser.mat., mekh.astron.fiz.khim. 14 no.4:195-198 '59.

1. Азедра органической химии Московского университета.
(Carbamic acid)

AUTHORS:

Kost, A. N., Terent'yev, P. B.

SOV/79-29-1-72/74

TITLE:

On the Bromination of the Cyclic Ketones by Means of Dioxane
Dibromide (O bromirovani tsiklicheskikh ketonov s
pomoshch'yu dioxsandibromida)

PERIODICAL:

Zhurnal obshchey khimii, 1959, Vol 29, Nr 1, pp 338-339 (USSR)

ABSTRACT:

Recently (Ref 1) I. V. Marchinskaya and A. S. Podberezina published a paper on the bromination of the cyclic ketones by means of dioxane dibromide. The authoresses did not succeed (Refs 2,3) in obtaining monobromo-cyclohexanone wherefrom they drew the false conclusion that dioxane dibromide cannot be used in this reaction. The authors, however, state that this method was tested several times and had delivered clear results. The authoresses carried out bromination not according to a strict method: first, the brominating agent and the ketone were not taken in equimolecular quantities and the ketone was in addition to this also used for the dioxane dibromide solution which also increased the proportional quantity of the latter. Secondly, in the reaction process a temperature rise (self-heating of the solution) was permitted which also promoted the formation of the dibromo ketone. Under these conditions the

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SOV/79-29-1-72/74

On the Bromination of the Cyclic Ketones by Means of Dioxane Dibromide

formation of monobromo-cyclohexanone was not to be expected. According to L. A. Yanovskaya (Refs 2,3) the following conditions had to be observed: 1) The equimolecular amount of dioxane dibromide must be added in small portion to the solution of the ketone in ether or dioxane with simultaneous cooling and stirring. 2) In the case of bromination the ketone solution must be cooled with ice. 3) Owing to the small stability of the α -bromo ketone (formation of resin!) the solvent must be separated in nitrogen current and vacuum. The yields in monobromo-cyclohexanone amount in this case, depending on the skill of the experimentator, between 45 and 65% respectively. There are 4 Soviet references.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: August 25, 1958

Card 2/2

KOST, A.N.; KUDRIH, A.N.; TERENT'YEV, P.B.; YERSHOV, V.V.

Hexamethylenimine ketones, a new class of local anesthetics. Vest.
Mosk.un.Ser. 2: Khim. 15 no.3:66-69 My-Je '60. (MIRA 13:8)

1. Kafedra organicheskoy khimii i kafedra farmakologii Ryazanskogo
meditsinskogo instituta.
(Ketones) (Hexamethylenimine) (Anesthetics)

TERENTYEV, P. B., ROZENFELD, I. L., PERSIANTSEVA, V. P., POLTEVA, M. V., Moskva:

"A Study On The Mechanism Of Metals Protection Against Corrosion By Volatile Inhibitors".

report submitted for the European Symposium on Corrosion Inhibitors, Ferrara Italy,
29 Sep-1 Oct 1960.

Terent'yev, I. B.

S/079/60/030/008/002/006
B004/B064

AUTHORS: Kost, A. N., Terent'yev, A. P., Vinogradova, Ye. V.,
Terent'yev, P. B., Yershov, V. V.

TITLE: Addition of Aromatic Amines and Phenyl Hydrazine to
2-Methyl-5-vinyl Pyridine 7

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol. 30, No. 8,
pp. 2556 - 2562

TEXT: 2-methyl-5-vinyl pyridine reacts when heated with aniline in the presence of metallic sodium under the formation of 2-methyl-5-(2-phenylaminoethyl)-pyridine (I):

$\text{CH}_3\text{-C}_5\text{H}_3\text{N-CH-CH}_2 + \text{H}_2\text{NC}_6\text{H}_5 \xrightarrow{\text{Na}} \text{CH}_3\text{-C}_5\text{H}_3\text{N-CH}_2\text{CH}_2\text{NH-C}_6\text{H}_5$. Similar reactions occur with ethyl aniline, o-, m-, and p-toluidine, o- and p-anisidine, with p-compounds reacting more easily. A low yield in the addition product was obtained with β -naphthyl amine. It was not possible to isolate the reaction product with p-phenylene diamine. A decrease in the basicity of the amino group reduces the capability of addition. While

Card 1/4

Addition of Aromatic Amines and Phenyl
Hydrazine to 2-Methyl-5-vinyl Pyridine

S/079/60/030/008/002/008
B004/B064

diphenyl amine, o-nitroaniline, indole, acetamide, and phthalimide react with α -vinyl pyridine, no reaction took place with the β -vinyl pyridine used by the authors. Nor did a reaction take place with acetoacetic ester, ethanol, butanol, phenol, and sodium bisulfite. A by-product with a high boiling point, N,N-bis[2-(2-methylpyridyl-5)-ethyl]-p-toluidine (structural formula 2) was obtained with p-toluidine. Its structure could be proved a) by the lacking N-H absorption band in the infrared spectrum, b) by the impossibility of carrying out acylation. The N-nitroso compound was obtained from I with HNO_2 , which could be reduced to the N-amino compound $\text{CH}_3\text{C}_5\text{H}_3\text{N}-\text{CH}_2\text{CH}_2\text{N}-\text{C}_6\text{H}_5$ (3). Compound 3

was also obtained by direct addition of phenyl hydrazine to 2-methyl-5-vinyl pyridine. Corresponding to a typical aryl hydrazine a re-arrangement according to Fischer takes place in cyclohexanone under the formation of N-[2-(2-methyl pyridyl-5)-ethyl]-1,2,3,4-tetrahydrocarbazole (4). The experimental part lists the synthesis of the following compounds: 2-methyl-5-(2-phenyl aminoethyl)-pyridine; 2-methyl-5-(N-formyl-2-phenyl-aminoethyl)-pyridine; 2-methyl-5-(N-acetyl-2-phenyl aminoethyl)-pyridine;

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Addition of Aromatic Amines and Phenyl
Hydrazine to 2-Methyl-5-vinyl Pyridine

S/079/60/030/008/002/008
B004/B064

2-methyl-5-(N-benzoyl-2-phenyl aminoethyl)-pyridine; 2-methyl-5-(N-nitroso-2-phenyl aminoethyl)-pyridine; 2-methyl-5-(2-o-tolylaminoethyl)-pyridine and the respective N-acetyl compound; the corresponding m- and p-tolylamino compounds; 2-methyl-5-(2-o-anisylamino ethyl)-pyridine; the respective N-acetyl compound and the corresponding p-anisyl amino compounds; 2-methyl-5-(N-ethyl-2-phenyl aminoethyl)-pyridine; 2-methyl-5-[2-(N-p-nitrosophenyl-N-ethyl amino)-ethyl]-pyridine; 2-methyl-5-(2-β-naphthyl aminoethyl)-pyridine; 2-methyl-5-(N-amino-2-phenyl aminoethyl)-pyridine; N-[2-(2-methyl pyridyl-5)-ethyl]-1,2,3,4-tetrahydrocarbazole. The majority of the substances synthesized are highly viscous oils. Experiments made at the Kafedra farmakologii Minskogo meditsinskogo instituta (Chair of Pharmacology of the Minsk Medical Institute) led to the finding that peritoneal injection of the hydrochlorides of these compounds in mice leads to the excitation of the parasympathetic nervous system (muscarine and nicotine effect). The toxicity (LD_{100}) is between 300 and 500 mg/kg live weight. Nitroso

groups in para position increase the toxicity by its five-fold. Iodo-methylates are more toxic than hydrochlorides. There are 4 non-Soviet references.

Card 3/4

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